Lightning 101

The Danger

- Average 25 million cloud-to-ground lightning strikes/year
- Average number of people killed per year in USA:
  - Lightning 73
  - Tornadoes 68
  - Hurricanes 16
- Average “reported” lightning injuries per year – 300
- Most Deaths and Injuries occur during Summer
- Average number of days per year with thunderstorms
  - Huntsville Area 55
  - KSC Area 80

Information source – National Weather Service

Four Basic Things to Know

1. Lightning seeks path of least resistance

Stay away from things that are conductive – telephones, plumbing fixtures, golf clubs, water, wire fences, clothes lines, etc.

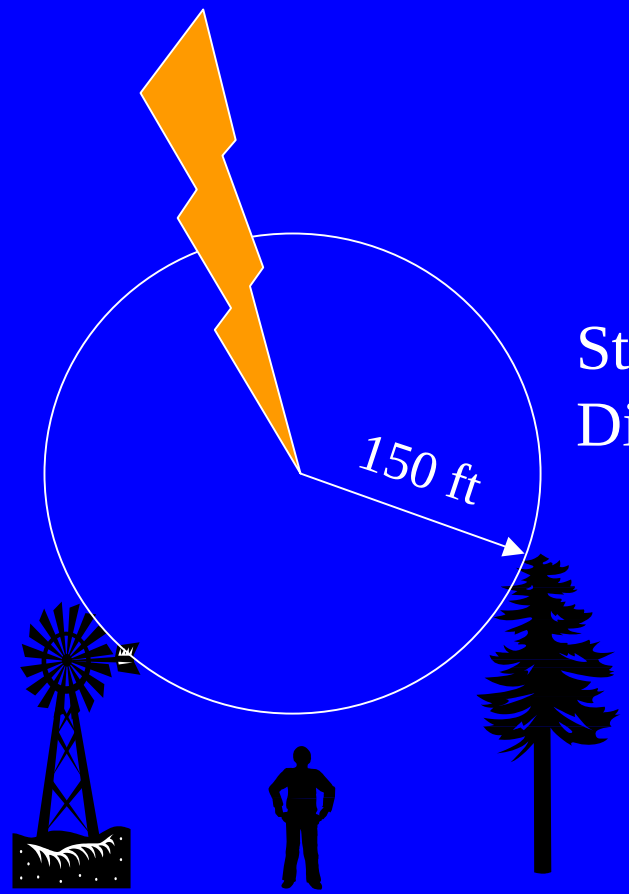
Avoid relative high places like hill tops and tops of buildings.

Four Basic Things to Know (cont)

2. The Rolling Sphere Model

As lightning approaches the ground it will reach out a radius of about 150 ft to strike the closest object.

A city street between high rise buildings would be safe. A wide open field would not!

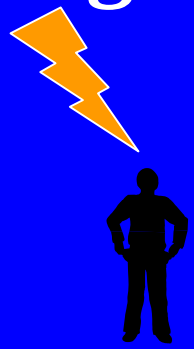


Striking Distance

Four Basic Things to Know (cont)

3. How lightning can effect you

- Direct Hit



- Indirect Effect – Step Potential

After entering the ground, the voltage surge can travel horizontally for several feet depending on conditions.

- Indirect Effect – Side flash

With a poor conductor like a tree, a side flash of 7 feet would not be unrealistic!

Indirect effects cause the most deaths or injuries!

Four Basic Things to Know (cont)

4. When to take shelter

- If you can hear thunder you are in striking distance!
- 30-30 Rule. You should be in shelter:
  - If time between lightning strike and thunder is < 30 seconds.
  - At least 30 minutes after the last lightning strike

Good Places to Be

- Dwellings or other buildings that are protected against lightning
- Underground shelters such as subways, tunnels, and caves
- Large metal-frame buildings
- Large unprotected buildings
- Enclosed automobiles, buses, and other vehicles with metal tops and bodies
- Enclosed metal trains and street cars
- Enclosed metal boats or ships
- Boats that are protected against lightning
- City streets shielded by nearby buildings

If not possible to choose a location with good protection

- Seek depressed areas — avoid mountaintops, hilltops, and other high places.
- Seek dense woods — avoid isolated trees.
- Seek buildings, tents, and shelters in low areas — avoid unprotected buildings.
- If caught in an exposed area, crouch as low as possible, keeping feet together, putting hands on knees. Do not lie flat.

Places to Avoid

Extremely Hazardous

- Hilltops and ridges
- Areas on top of buildings
- Open fields, athletic fields, golf courses
- Parking lots and tennis courts
- Swimming pools, lakes, and seashores
- Near wire fences, clotheslines, overhead wires, and railroad tracks
- Under isolated trees
- Near electrical appliances, telephones, plumbing fixtures, and metal or electrically conductive objects

Little Protection - Avoid

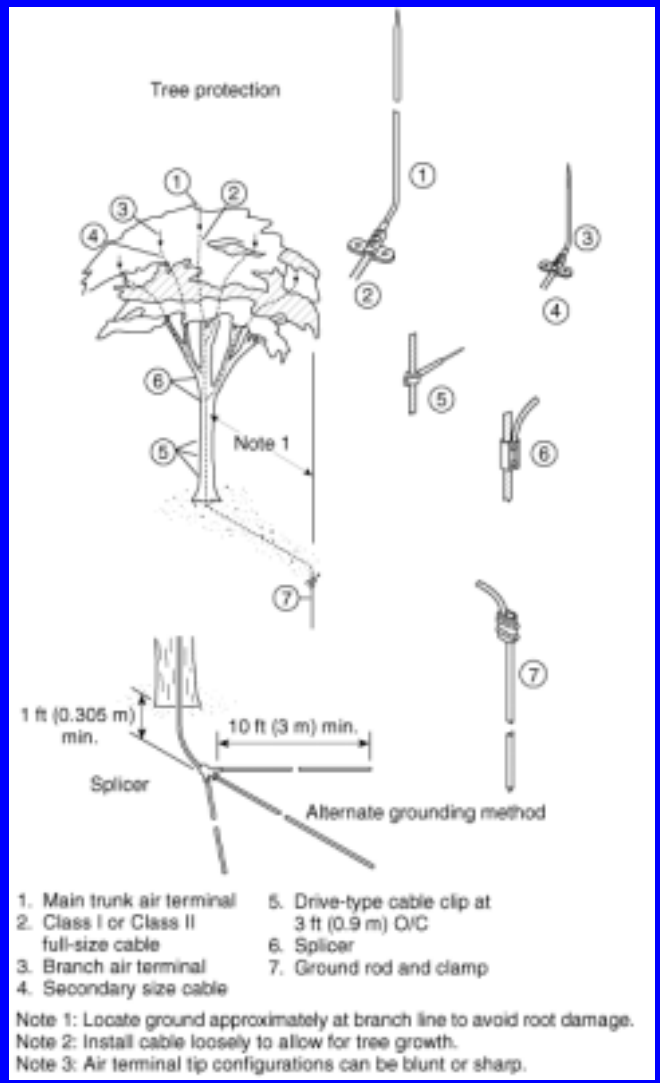
- Small, unprotected buildings, barns, sheds, and so forth
- Tents and temporary shelters
- Automobiles (nonmetal top or open)
- Trailers (nonmetal or open)

Places to Avoid (cont)

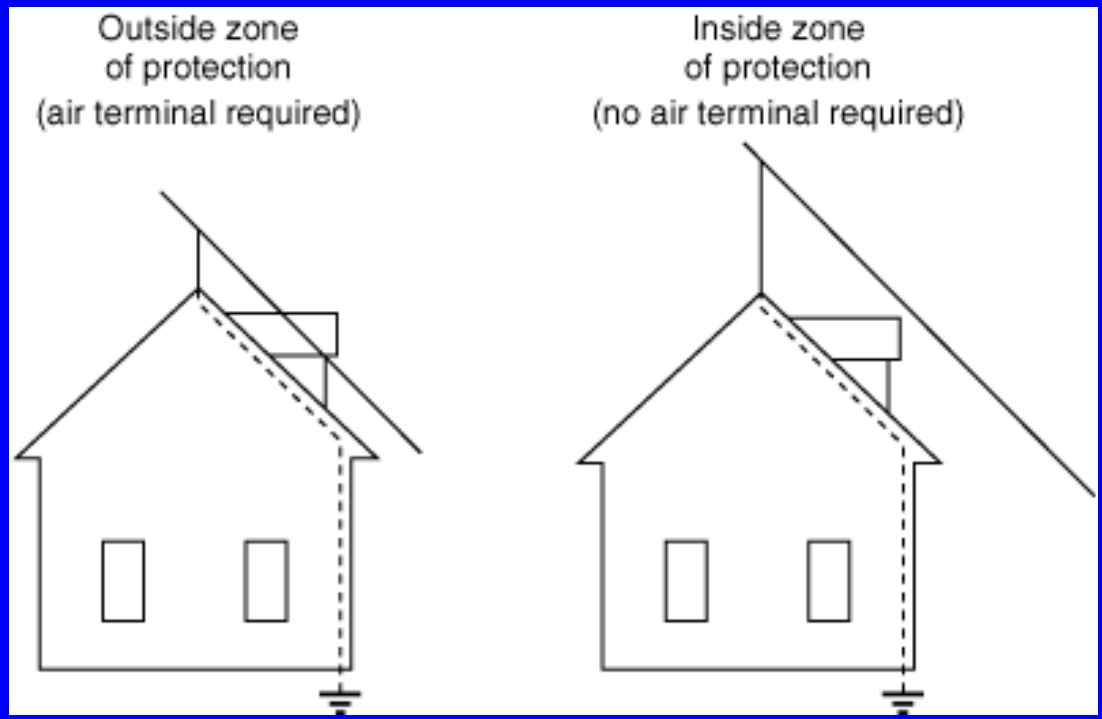
Especially Hazardous

- Open tractors or other farm machinery operated in open fields
- Golf carts, scooters, bicycles, or motorcycles
- Open boats (without masts) and Hovercraft
- Automobiles with nonmetal top or open)

Protection for Property



- You may want to consider lightning Protection for:
  - Home
  - Trees



See NFPA 780, “Lightning Protection Code”for details


Have a safe
summer!